UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/760,964	01/16/2001	George H. Kerby	10002893-1	4352

7590 07/26/2005

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER	
DIVINE, LUCAS	

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/760,964	KERBY, GEORGE H.	
	Examiner	Art Unit	
	Lucas Divine	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 January 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Claims 1 – 20 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 – 4, 6, 8 – 13, 15, and 17 – 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amano et al. (US 6100996) in view of Hirst (US 5655174) and Nakano (US 5913097) hereafter referred to as Amano, Hirst, and Nakano.

Regarding claim 1, Amano teaches **a printer system** 1000 in Figs. 1 and 2 **comprising**:

a first communication interface configured to receive a humidity value. Fig 16 shows a communication interface 106 accepting sensor information from the sensor interface 410 and passing it through to the print controller to the printing system functionally shown in Fig. 2. This sensor value can be a humidity value as taught in col. 25 lines 46-49.

and printer components configured to electronically control printing operation based on the humidity value. The electronic printer components of printer 1000 (including electronic printer controller 103) detect the humidity sensor information as taught in col. 12 lines 37-40 wherein the status information is detected from the print unit 17 which includes the sensor 1020. The printer components then configure the printing operations for optimum printing based

on the humidity status reading from the print unit as taught in col. 25 lines 46-51. This optimum printing based on the humidity status can be further seen in Fig. 3 where the status information of the print unit is detected and printing is optimally adjusted.

While Amano teaches using a humidity sensor to monitor system status, he does not teach a humidity sensor to toner cartridge relationship to control system operation.

Hirst teaches a humidity sensor 46 for monitoring system changes and controlling system operation. Further is taught a humidity sensor to toner relationship as seen from Fig. 5. The humidity sensor 46 is located near the toner supply 48 to detect a toner area humidity value as taught in col. 4 lines 41-67. It would have been obvious to one of ordinary skill in the art to place the humidity sensor of Amano near the toner as taught in Hirst in order to control system operation. This would produce a more accurate system status reading and provide a more proper printed output improving thus on a stated objective of Amano in col. 4 line 64.

However, the combination of Amano and Hirst does not teach specifically placing a sensor status monitoring on the toner cartridge.

Nakano teaches specifically placing a sensor on the toner cartridge for status monitoring. Fig. 2 shows a sensor 55 physically attached to the toner cartridge 30 discussed in col. 5 lines 62-64. Thus, sending sensed information **from the toner cartridge.**

It would have further been obvious to one of ordinary skill in the art to place the sensor for monitoring system status of Amano and Hirst on the toner cartridge as taught in Nakano. The motivations for doing so would have been to place the sensor closer to the toner to further improve on the optimum printing objective of Amano and to provide a toner cartridge and printing system with a more economical packaging setup and manufacturing setup because of the

combination of two devices, humidity sensor and toner cartridge. The economical reengineering of parts is suggested and encouraged by Hirst in col. 6 lines 23-29.

Regarding claim 2, which depends from claim 1, the **humidity sensor** of Amano would have been known to one of ordinary skill in the art to be **configured to detect a humidity level and generate the humidity value to correspond with the humidity level.** Humidity sensors used in digital printing systems were known to detect humidity levels of an area and provide a humidity value based on the detected humidity level and this is suggested in the printing system of Amano receiving a humidity value from the sensor.

Amano further teaches **a second communication interface configured to transfer the humidity value from the humidity sensor to the first communication interface.** The sensor interface 410 is configured to take sensor information and transfer it to the first communication interface 106 as shown in Fig. 15.

Regarding claim 3, which depends from claim 1, Amano further teaches **configuring the printer components to configure a dither matrix based on the humidity value.** The printer components of printer 1000 detect the humidity sensor information as taught in col. 12 lines 37-40 wherein the status information is detected from the print unit 17 which includes the sensor 1020. The printer components then configure the printing operations for optimum printing based on the humidity status reading from the print unit as taught in col. 25 lines 46-51. This optimum printing based on the humidity status can be further seen in Fig. 3 where the status information of the print unit is detected and a dither matrix is configured to properly output the print information. Col. 15 lines 8-9 of Amano further teach a dither matrix change program inside the printer components that configure the dither matrix as shown in step S34 of Fig. 3.

Regarding claim 4, which depends from claim 3 as it depends from claim 2, Amano further teaches that **the printer components are configured to select the dither matrix from a plurality of dither matrices based on the humidity value.** Figs. 4 and 6 show examples of the plurality of dither matrices selectable based on the inputted status information of Fig. 3 and col. 5 line 3 discusses using a plurality of dither matrices (processing means) for processing an input image based on a humidity value (input rule).

Regarding claim 6, which depends from claim 1, Amano further teaches that **the printer components are configured to use a default value if the humidity value is not available** in col. 13 lines 36-40, wherein a default printing state is used when a status change or an absence of a humidity value (status information) causes the print unit 17 to return to the normal status, where it remains until a humidity value (status) change occurs.

Regarding claim 8, which depends from claim 1, Amano teaches all of the limitations of claim 8. The limitation subject matter is the same as the limitation subject matter of claim 1 except the limitation listed below, and is rejected for the reasons stated in the rejection of claim 1. Further, the laser printing system in Fig. 1 of Amano would have been known to one of ordinary skill in the art to work in **real-time.** The electronic laser printer of Amano would have been known to one of ordinary skill in the art update printer information at the same rate as it received it, wherein rapid rate of information processing is one characteristic of laser printing systems. This could have been further seen in Fig. 3 where there are no delays between the status reception and the dither matrix update. It also would have been known to one of ordinary skill in the art for the humidity sensor to provide humidity data in **real-time** in order to provide the real-time laser printing system with accurate system information.

Regarding claim 9, which depends from claim 1, Amano, Hirst, and Nakano teach the parent limitations of claim 1 as discussed in the rejection of claim 1. Amano further teaches a printing system **configured to produce monochrome copies.** Fig. 14 shows a black toner cartridge 220Bk that enables the printing system 1000 to produce monochrome copies (print outputs).

Regarding claim 10, the structural elements of claim 1 perform all of the steps of method claim 10 as discussed in claim 1. Therefore, claim 10 is rejected for the reasons stated in the rejection of claim 1.

Regarding claim 11, which depends from claim 10, the structural elements of claim 2 as it depends from the rejected claim 1 perform the steps of method claim 11. Therefore, claim 11 is rejected for the reasons stated in the rejection of claim 2.

Regarding claim 12, which depends from claim 10, the structural elements of claim 3 as it depends from the rejected claim 1 perform the steps of method claim 12. Therefore, claim 12 is rejected for the reasons stated in the rejection of claim 3.

Regarding claim 13, which depends from claim 12 as it depends from claim 10, the structural elements of claim 4 as it depends from the rejected claims 1 and 3 perform the steps of method claim 13. Therefore, claim 13 is rejected for the reasons stated in the rejection of claim 4.

Regarding claim 15, which depends from claim 10, the structural elements of claim 6 as it depends from the rejected claim 1 perform the steps of method claim 15. Therefore, claim 15 is rejected for the reasons stated in the rejection of claim 6.

Regarding claim 17, which depends from claim 10, the structural elements of claim 8 as it depends from the rejected claim 1 perform the steps of method claim 17. Therefore, claim 17 is rejected for the reasons stated in the rejection of claim 8.

Regarding claim 18, which depends from claim 10, the structural elements of claim 9 as it depends from the rejected claim 1 perform the steps of method claim 18. Therefore, claim 18 is rejected for the reasons stated in the rejection of claim 9.

Regarding claim 19, Amano in view of Hirst and Nakano teaches all of the limitations of claim 19 as recited in claim 2 except for the limitation below. Therefore, the limitations that are the same are rejected for the same reasons stated in the rejection of claim 2.

Amano further teaches the **toner cartridge** 220Bk comprising **toner for a printing system** in col. 18 lines 40-41, wherein toner is stored in the toner cartridges.

3. Claims 5, 7, 14, 16, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amano, Hirst, and Nakano as applied to claims 1 – 4, 6, 8 – 13, 15, and 17 – 19 above, and further in view of Allen et al. (US 6268094) hereafter referred to as Allen.

Regarding claim 5, which depends from claim 3 as it depends from claim 1, Amano, Nakano, and Hirst teach all of the limitations of parent claims 1 and 3.

Amano further teaches the **printer components are configured to scale the dither matrix** based on humidity inputs in col. 13 lines 58-65, wherein the dither matrix is scaled based on a humidity value (status input).

While the combination teaches systems for monitoring print system information, they do not teach **the relationship of a toner humidity level to a response curve to predict toner consumption and the resultant toner level.**

Allen teaches **the relationship of a toner humidity level to a response curve to predict toner consumption and the resultant toner level** in a system for monitoring ambient system information including the sensing of humidity 33. Fig. 2 ref. no. 33 and col. 5 lines 9-16, teach the preferred method of evaluating a humidity value is by using a response curve. It would have been obvious to one of ordinary skill in the art to apply the response curve of Allen to the dither matrix selection of Amano. The motivation for doing so would have been to provide quicker dither matrix selection by using the quick lookup of system status predictions, such as toner consumption values, on the response curve as opposed to the more computationally intense humidity status analysis and dither matrix calculations shown in the analysis process in Fig. 5 of Amano.

Regarding claim 7, which depends from claim 1, by using such a response curve as taught by Allen, this would enable **the printer components to be configured to determine a humidity range corresponding to the humidity value**. When the humidity value is placed on the response curve of Allen, the printer components are able to determine a range based on the curve near the humidity value.

Regarding claim 14, which depends from claim 12 as it depends from claim 10, the structural elements of claim 5 as it depends from the rejected claims 1 and 3 perform the steps of method claim 14. Therefore, claim 14 is rejected for the reasons stated in the rejection of claim 5.

Regarding claim 16, which depends from claim 10, the structural elements of claim 7 as it depends from the rejected claim 1 perform the steps of method claim 16. Therefore, claim 16 is rejected for the reasons stated in the rejection of claim 7.

Regarding claim 20, which depends from claim 19, the structural elements of claim 7 as it depends from the rejected claim 1 perform the steps of method claim 20. Therefore, claim 20 is rejected for the reasons stated in the rejection of claim 7.

Response to Arguments

4. Applicant's arguments filed 4/27/05 have been fully considered but they are not persuasive.

5. With respect to applicant's argument on pages 5 and 6 regarding claim 1 that Nakano teaches a sensor for detecting remaining toner and Nakano has no teaching or suggestion to electronically control the printing process.

In reply, the Nakano reference is relied upon for teaching the ability to place a sensor on a print cartridge. Thus, the humidity sensor of the Amano and Hirst could have been placed on the cartridge itself. The motivations for doing so would have been to place the sensor closer to the toner to further improve on the optimum printing objective of Amano and to provide a toner cartridge and printing system with a more economical packaging setup and manufacturing setup because of the combination of two devices, humidity sensor and toner cartridge. The economical reengineering of parts is suggested and encouraged by Hirst in col. 6 lines 23-29.

The Hirst reference teaches the toner/humidity relationship and placing the humidity sensor of Amano and Hirst as close to the toner as possible would have been advantageous to provide the most accurate toner humidity and adjust printing accordingly, as the system of Amano and Hirst would do.

Further, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

6. With respect to applicant's argument on page 6 regarding claim 1 that "there is no motivation provided from within the Nakano reference to combine the ink level detection, mechanical methodology with the external environmental issues addressed in Amano and Hirst".

In reply, the Nakano reference is relied upon for teaching the ability to place a sensor on a print cartridge. It is not relied upon for ink level detection or how the sensor of Nakano internally works, because the sensor used in the combined system would be a humidity sensor that of Amano and Hirst.. Thus, the humidity sensor of the Amano and Hirst could have been placed on the cartridge itself. The motivations for doing so would have been to place the sensor closer to the toner to further improve on the optimum printing objective of Amano and to provide a toner cartridge and printing system with a more economical packaging setup and manufacturing setup because of the combination of two devices, humidity sensor and toner cartridge. The economical reengineering of parts is suggested and encouraged by Hirst in col. 6 lines 23-29.

The motivation for combining Nakano to that of Amano and Hirst is not from Nakano, but from Allen, wherein the humidity sensor 46 is located near the toner supply 48 to detect a toner area humidity value as taught in col. 4 lines 41-67. Thus, the Hirst reference teaches the toner/humidity relationship and placing the humidity sensor of Amano and Hirst as close to the toner as possible would have been advantageous to provide the most accurate toner humidity and adjust printing accordingly, as the system of Amano and Hirst would do.

7. With respect to applicant's argument on page 7 that Allen does not cure the deficiencies discussed above in the connection with Amano, Hirst, and Nakano that the dependent claims are in condition for allowance.

In reply, the combination is not deficient as stated and explained in above replies. And since no argument is made in view of the added features that Allen brings to the combination of Amano, Hirst, and Nakano, the rejections including Allen are maintained.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucas Divine whose telephone number is 571-272-7432. The examiner can normally be reached on Monday - Friday, 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KING Y. POON
PRIMARY EXAMINER

Lucas Divine
Examiner
Art Unit 2624

ljd